United States Department of Agriculture | Forest Service | R3 Regional Office | 333 Broadway SE
Albuquerque, NM 87102
FAX (505) 842-3800
V/TTY (505) 842-3292

File Code: 3420 **Date:** February 5, 2004
Route To:

Subject: 2000-2003 Douglas-fir Tussock Moth Trapping Results, Sandia RD (sandiard)

To: District Ranger, Sandia RD

Douglas-fir tussock moth (DFTM), *Orgyia pseudotsuga*, is a native defoliator of major importance in the mixed conifer, Douglas-fir, and true fir forests of the interior west. Outbreaks can result in spectacular defoliation, top-kill, and tree mortality. In addition, hairs from egg masses, larvae, and pupal cocoons can be irritating to some individuals, causing asthma symptoms and/or severe skin rashes. These insects are seldom noticed between outbreaks, but populations can reach outbreak levels very quickly.

This memo documents our DFTM trapping efforts on the Sandia RD, which began in July, 2000, when a localized outbreak occurred in the Sacramento Mountains on the Lincoln NF. Since DFTM defoliation has been recorded on the Sandia Mountains on several occasions in the recent past (1957, 1967, 1975, and 1978), we decided to monitor DFTM male moths on the Sandia RD to determine existing population trends. This survey uses sticky traps baited with a synthetic version of the female sex attractant, or pheromone, which is one thousand times weaker than the natural pheromone emitted by the female moth. The number of male moth captures in late summer and early fall during the mating season is used as an early warning indicator of future population trends. When average trap captures reach 25 or more male moths, visible defoliation of host trees can be expected to occur within the next two years. A total of five sites were trapped: Tree Springs Trailhead, Capulin Springs Picnic Area, Balsam Glade Picnic Area, Nine Mile Picnic Area, and a site 2.5 miles west along the south side of the Sandia Crest National Byway. Because of the lack of favorable host type at this last site (spruce-fir), this site was dropped in 2002 and replaced by the Las Huertas Turnoff site, which consists of Douglas-fir and white fir, the preferred host type of the DFTM. Each plot consisted of five delta sticky carton traps spaced 1 to 1½ chains apart and 1.5 chains from the road. Traps were placed in the field in July and retrieved in mid-November.

Survey results from 2000-2003 are summarized in Table 1. The results of the 2000 and 2001 trapping results, summarized in our 3420 memo dated December 27, 2001, showed average male moth trap catches increased dramatically in some areas (Balsam Glade and Capulin Springs Picnic Areas) and only slightly in other areas (Tree Spring Trailhead, Nine Mile Picnic Area, and the site 2.5 miles west of Nine Mile Picnic Area). In 2002, the average number of male moth trap catches decreased at three of the five sites trapped (Tree Spring Trailhead, Balsam Glade Picnic Area, and Capulin Spring Picnic Area), but increased slightly at Nine Mile Picnic Area.

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The number of male moths trapped at the Las Huertas Turnoff site (County road 165) averaged 18.3 moths per trap. In 2003, the average number of DFTM male moth trap catches continued to decrease at Tree Spring Trailhead, but increased again at Balsam Glade Picnic Area, Capulin Springs Picnic Area and the Las Huertas Turnoff sites. Average numbers of DFTM male trap catches at Nine Mile Picnic Area remained unchanged.

Table 1. 2000-2003 Douglas-fir Trapping Results

Location	Site	Average # of Moths/ Trap 2000	Average # of Moths/ Trap 2001	Average # of Moths/ Trap 2002	Average # of Moths/ Trap 2003
Sandia RD	Tree Spring Trailhead	20.5	24.5	22.7	13.2
	Balsam Glade Picnic Area	0	25.8	16.8	25
	Capulin Springs Picnic Area	8.4	16.8	9.6	11.4
	Las Huertas Turnoff	N/A	N/A	18.3	23.2
	Nine Mile Picnic Area	0	0.4	1.2	1.2
	2.5 miles west of Nine Mile Picnic Area	0	0.4	N/A	N/A

Although I saw several heavily DFTM-defoliated white fir trees at Balsam Glade Picnic Area and the Las Huertas Turnoff site last fall (Figures 1, 2 and 3), no DFTM defoliation was detectable from the air during our insect and disease survey flights over the Sandia Mountains in July 2003. I also saw no signs of DFTM activity (egg masses, larvae, or old cocoons) when I placed the traps at these sites in July 2003. However, Dave Conklin, Pathologist, Forest Health, New Mexico Zone, and I did find some DFTM cocoons on one of the defoliated white firs at Balsam Glade Picnic Area in September 2003, which confirmed the defoliation was caused by the DFTM.

Figure 1. Douglas-fir tussock moth-caused defoliation on white fir, Balsam Glade Picnic Area.

Figures 2. and 3. Douglas-fir tussock moth-caused defoliation on white firs at the Las Huertas Turnoff site, Sandia Crest National Scenic Byway.

Based on our trapping results, aerial survey results (refer to 3410 memo dated December 17, 2000), and ground observations, current DFTM infestations appear to be chronic, but confined to individual trees. Parasitic flies, wasps, and arthropod and vertebrate predators, along with abiotic factors, could be keeping DFTM at low infestation levels. Our results also suggest that similar levels of DFTM defoliations may occur again in 2004. Because tussock moth numbers can fluctuate greatly between generations and could increase to outbreak levels throughout the susceptible host type, we plan to conduct a tussock moth larval survey in late May or early June 2004. In addition, pheromone traps will again be placed at the same locations trapped in 2003 to monitor adult male moth populations. Aerial surveys to detect defoliation will resume in the summer of 2004.

If you have any questions concerning this evaluation, please contact Terry Rogers at (505) 842-3287 or by e-mail at trogers@fs.fed.us.

/s/ Terrence J. Rogers
TERRENCE J. ROGERS
Entomologist, Forest Health,
New Mexico Zone

cc: Leonard Lucero, Debra Allen-Reid, Douglas L Parker, John Anhold, Mailroom R3 Cibola, Clifford Dils